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Title: Binary Tracers and Multiple Geophysical Data Set Inversion Methods to Improve EGS Reservoir Characterization and Imaging

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Binary Tracers and Multiple Geophysical Data Set Inversion

Methods to Improve EGS Reservoir Characterization and Imaging

Prime Recipient: Los Alamos National Laboratory (LANL)

Principal Investigator: Paul W. Reimus, LANL

Key Participants: LANL (L. Huang, S. Kelkar), Cyrq Energy, AltaRock Energy

Project/Technology Goals and Impacts:

- (1) Advance the state of the art in the use of tracers to interrogate fracture surface area in geothermal reservoirs,
- (2) Significantly improve the ability to characterize or image geothermal reservoirs from multiple data sets,
- (3) Demonstrate the use of modeling tools to integrate tracer and geophysical data into a useful reservoir model.

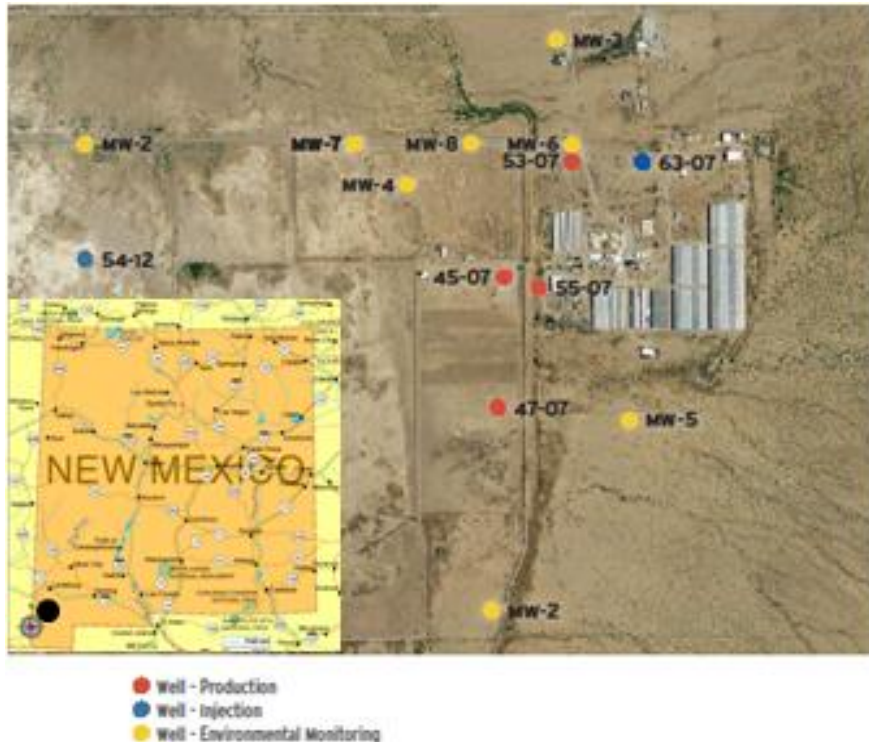
Key Concepts

- Develop innovative “binary” tracers that do not react with fracture surfaces during injection into an EGS reservoir but interrogate fracture surface area when produced from the reservoir.
- Develop methods of simultaneously inverting multiple geophysical data sets to obtain high-resolution images of a reservoir, especially reservoir flow pathways.
- Perform simultaneous inversions of tracer and geophysical data sets and integrate information into a state-of-the-art reservoir flow/heat/mass transport model

Budget Information

Requested EERE Funds: ~\$500K/yr for 3 years
Cost Share (in-kind from Cyrq): ~\$60K/yr for 3 years
Total Budget: \$1,680K over 3 years with cost share

The Lightning Dock Geothermal Site (NM) as a Test Bed



Significant improvement in fracture surface area interrogation offered by a binary tracer (red) compared to a conventional reactive tracer that interacts with fracture surfaces both on the way in and out of reservoir (blue) in a single-well EGS stimulation.

